

Claims

1. A hybrid polypeptide comprising a multiplicity of immunodominant T cell epitopes of allergens, at least two of which do not cross-react with each other.
2. A hybrid polypeptide according to claim 1, characterized in that the T cell epitopes come from non-cross-reacting allergens.
3. A hybrid polypeptide according to claim 1, characterized in that the hybrid polypeptide comprises the T cell epitopes of grass and birch pollen allergens.
4. A hybrid polypeptide according to claim 1 or 2, characterized in that the hybrid polypeptide comprises the T cell epitopes of grass, birch pollen and latex allergens and/or animal allergens.
5. An allergen chimera comprising a complete protein and at least one further allergen fragment.
6. An allergen chimera according to claim 5, characterized in that the complete protein is a Bet v 1 protein.
7. An allergen chimera according to claim 5 or 6, characterized in that the complete protein and the allergen fragments do not cross-react with each other.
8. An allergen chimera according to any of claims 5-7, characterized in that the allergen fragments are T cell epitopes.
9. A hybrid polypeptide according to any of claims 1-4 or an allergen chimera according to any of claims 5-8, characterized in that the hybrid polypeptide or the allergen chimera stops the formation of regulatory and/or immunomodulatory active cytokines.
10. A method for producing hybrid polypeptides according to any of claims 1-4, 9, characterized in that the hybrid polypeptides are produced by chemical synthesis.
11. A polynucleotide which encodes the allergen chimera according to claims 6-9.

12. A method for producing an allergen chimera according to any of claims 5-9, comprising the following steps:
 - a) providing a polynucleotide which encodes the allergen chimera,
 - b) inserting the polynucleotide into a host cell; and
 - c) growing the host cell under conditions such that it expresses the allergen chimera; and
 - d) recovering the expression products from the cell.
13. A method according to claim 12, wherein the polynucleotides coding for the allergen chimera are produced by PCR technology.
14. A pharmaceutical composition comprising a hybrid polypeptide according to any of claims 1-4, 9 and/or an allergen chimera according to any of claims 5-9.
15. A pharmaceutical composition according to claim 14 which is a vaccine composition.
16. Use of the hybrid polypeptides according to any of claims 1-4, 9 and/or the allergen chimeras according to any of claims 5-9 for producing a drug.
17. Use of the hybrid polypeptides according to any of claims 1-4, 9 and/or the allergen chimeras according to any of claims 5-9 for producing a vaccine for treating allergic diseases.
18. Use of hybrid polypeptides according to any of claims 1-4, 9 and/or of allergen chimeras according to any of claims 5-9 for producing a vaccine for simultaneously treating at least two different allergies.
19. Use according to claim 17 or 18, characterized in that the different allergies are triggered by non-cross-reacting allergens.
20. Use according to claims 17 to 19, characterized in that the allergies are birch allergy and/or grass pollen allergy and/or latex allergy and/or animal allergy.

21. Use according to any of claims 16-20, characterized in that the vaccine can be administered nasally, orally or rectally.
22. Use according to any of claims 16-20, characterized in that the vaccine can be administered systemically.
23. Use according to claims 16-20, characterized in that the vaccine can be used for prophylaxis and/or therapy of polysensitizations.
24. Use according to claims 16-23, characterized in that the vaccine comprises a mucosal adjuvant and/or an antigen transport system.
25. Use according to claim 24, characterized in that the lactic acid bacteria are the antigen transport system.